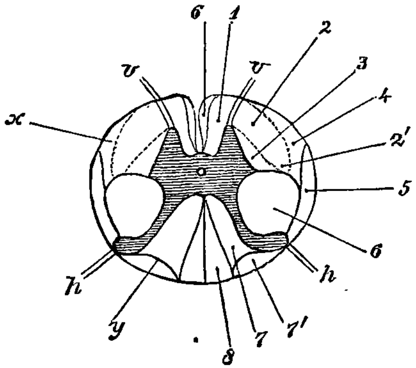
ent ages, and finds that it is possible to distinguish by this method several divisions of the lateral column, and two parts of the column of Burdach. The diagram shows these divisions: 1. Primary ant. column; 2, primary lateral column; 2^1, its lateral portion which passes into the superior olivary nucleus; 3, lateral boundary column; 4, peripheral lateral column; 5, direct cerebellar column; 6, pyramidal lateral column; 6^1, pyramidal anterior column (Türck); 7, primary posterior column of early development; 7^1, primary posterior column of late development; $7 + 7^1$ = col. of Burdach; 8, col. of Goll; *v. v.*, ant. nerve roots; *h. h.*, post. nerve roots. This scheme differs from that of Flechsig in distinguishing the columns separated by the lines x and y.

The peripheral lateral column (4) degenerates upward, as well as the direct cerebellar column, which fact explains the differences of opinion as to the exact anterior limit of the latter column. It also increases in size from below upward.



Cols. 1 and 2 pass into the inner portion of the formatio reticularis of the medulla, near the floor of the fourth ventricle. Cols. 2^1, 3, and 4 pass into the outer portion of the formatio reticularis of the medulla. Col. 5 passes to the cerebellum along the outer side of the formatio reticularis. Col. 6 crosses the median line in the lower decussation, and joins col. 6^1, and both together make up the anterior pyramid of the medulla. Cols. 7 and 7^1 end in the nucleus cuneatus. Col. 8 ends in the nucleus gracilis. From these two nuclei of the medulla new fibres arise which cross the median line in the upper decussation, and enter the interolivary tract of the medulla, there lying between the pyramid and the continuation of cols. 1 and 2.—*Neurolog. Centralbl.*, Aug. 1, 1885.

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b.—PHYSIOLOGY OF THE NERVOUS SYSTEM.

THE SOUND ACCOMPANYING THE SINGLE CONTRACTION OF SKELETAL MUSCLE.—Drs. Herroun and Yeo have made a series of experiments on this subject. The sound heard on auscultating a continuously contracting skeletal muscle is generally ascribed to certain vibrations of the active tissue, of such periodicity as to give rise to a tone of some 36–40 waves per second. The theory that the normal muscle sound might be said to have a relationship to a musical tone has been always used as an important link in the evidence tending to prove that normal nerve impulse is intermittent, and that continuous voluntary contraction is composed of summated single contractions, like the artificial tetanus produced by interrupted stimulations. The fact that the heart beat is but a single contraction is commonly urged against the view that the systolic sound is due to muscular tone, because it is commonly accepted that the sound produced by contracting skeletal muscles depend upon the regular variations of tension of the tetanic contraction. Their conclusions were as follows: 1. That a single contraction of a skeletal or heart muscle gives rise to motions or vibrations which evoke the resonant tone of the membrana tympani. 2 That the tone heard in voluntary contraction is no evidence of distinct or regular vibrations in the muscle, but merely of motions, regular or irregular, which produce the vibration of the membrana tympani. 3. That the tone heard in voluntary contraction is therefore no evidence of regular discontinuity of natural nerve impulses, but simply depends upon trembling movement due to variations either of force or distribution of stimulation. 4. That the objection to the first heart-sound being a muscular sound, because the systole of the heart is a single contraction, is not valid since the single contraction of a muscle causes motions or vibrations which call forth the resonant tone of the ear.—*Journal of Physiology*, vol. vi., Nos. 4 and 5.

SECONDARY AND TERTIARY DEGENERATIONS OF THE SPINAL CORD.—Mr. Sherrington has studied this subject in the dog, using material furnished in great part by Prof. Goltz. Up to the present time, the extent of that region of the cerebral cortex of the dog, injury to which gives rise to degeneration of the pyramidal tract, has not been experimentally determined. He arrived at the following conclusions : that injury to the cord-area of the cortex of one hemisphere causes degeneration in both halves of the spinal cord in the dorsal angle of the lateral columns ; that there is no reason to think this bilateral degeneration is a degeneration of the two crossed pyramidal tracts ; that the clinical symptoms of a unilateral cortex injury become bilateral and accord with the bilateral anatomical change ; that in the dog, after large destruction of both pyramidal tracts, voluntary power is so completely retained that defect of motion is observable only as clumsiness in execution of fine movements ; that in the adult dog at least, degeneration of the pyramid tract is accompanied by exaltation of the deep reflexes ; that the pyramidal tracts, as marked out by the date of acquirement of the medullary sheath by the fibres, do not coincide with those marked out by degeneration after destruction of the "cord-area" of the cortex cerebri,—the former are larger than the latter, including as well other fibres which do not come from the brain; that the histology and chronology of the secondary and tertiary degenerations of the spinal cord are not similar to those of the Wallerian degeneration of peripheral nerves.—*Journal of Physiology*, vol. vi., Nos. 4 and 5.

THE EXCITABILITY OF THE BRAIN IN RECENTLY BORN DOGS.—Dr. Joseph Panetti has investigated this subject. Soltmann, who experimented considerably on this subject, arrived at the conclusion that the cortex was excitable after the first ten days, and then did not call out movements simultaneously in all the muscles, but only for the opposite anterior extremity. He experimented upon non-narcotized animals, because in young dogs morphia makes the brain unexcitable. The animals were packed in cotton, and the brain was excited by the induction current. He arrived at the conclusion that in the first days of extra-uterine life, the cerebral cortex was excitable. The place of excitability was in the neighborhood of the sulcus cruciatus; the remainder of the brain-surface is unexcitable. The part of the brain which was excitable was removed, and the nerve-fibres were found to be non-medullated.—*Pflüger's Archiv*, Band xxxvii., Heft 3 and 4.

THE CENTRE OF RESPIRATION.—Dr. Mislawsky has made a series of experiments upon this subject. His results are as follows:

1. Gierke's bundle has no relation to the respiratory movements. They can be divided at the place where they converge toward the central canal, or higher at the level of the calamus scriptorius, yet the respiratory movements continue. These experiments were controlled by means of the microscope.
2. The respiratory movements cease when the group of cells is destroyed, which are lodged in the "lateral or intermediate columns" (Longet). These cells, not previously described, form two centres of irregular form on the two sides of the median line, inward from the roots of the hypoglossal. One-sided destruction of these centres causes arrest of the respiratory movements on the corresponding side. The paths of conduction from these centres to the spinal origin of the nerves going to the respiratory muscles, lie at the height where the central canal is already closed outside Gierke's bundle.

In the experiments where the medulla oblongata is divided from the spinal cord, there is no evidence that automatic centres exist in the spinal cord. The centres which are in the third ventricle, corpora quadrigemina, and aqueduct of Sylvius (Martin and Booker), have only a secondary relation, and must belong to the psycho-reflex apparatus. The separation of the brain and the corpora quadrigemina does not change, in any important manner, the respiratory movements. The destruction of the centres lodged in them calls out only temporary phenomena, which are connected with other disturbances of the locomotive apparatus. The experiments were made on cats.—*Centralblatt f. d. Med. Wiss.*, Nov. 27, 1885.

THE TEMPERATURE-SENSE.—Dr. Donaldson has made a series of experiments upon this subject. He found that the sensation of cold was felt only at definite points of the skin. The fact was noticed as follows: The sensations of motion as derived from the skin were being studied by means of a metal point which was slowly drawn over the surface. When the motion of this point, which was controlled by a suitable apparatus, was very slow, it often happened that it seemed to stand still for a time, or even be lost, when suddenly a sharp sensation of cold, distinctly localized, would recall its presence and position. Blix also discovered heat-spots in the skin and mapped them out. Mr. Donaldson used an instrument called the "kinesimeter." When Blix found a heat-spot and a cold spot on the skin the warmed point was applied to both, and then the cold point. No sensation followed the application of the warmed point to the cold spot, or the cold point to the heat-spot, thus showing the complete differentiation of these temperature-organs. Mr. Donaldson arrived at the following observations: The parts covered by skin have the temperature-organs in the skin. When the surfaces beneath the skin are tested they are found insensitive to temperature. The papillary layer is not necessary for temperature sensations. The nerves are generally regenerated in the healing of burns and other scars, except in certain places where the connective tissue is very dense.—*Mind*, July, 1885.

MOTOR SENSATIONS IN THE SKIN.—Prof. G. Stanley Hall and Dr. H. H. Donaldson have made a series of investigations upon this subject.

1. Error in judgment of direction of motion on the skin. Here they arrived at the following law: We are more likely, when in doubt, to judge motion on the surface of the limbs to be up rather than down their axis. On the breast, shoulder-blades, and back between them, the tendency was to judge movement to be towards the head, although these parts were less fully tested.

2. Time-relations of judgments of motion on the skin. They found that it takes more time for the judgment of motion down the limb than that of upward movement; that the time for a wrong judgment is much greater than the time needed for a correct judgment; that of the two errors, it takes longer to judge minus to be plus movement than the reverse.

3. Motor sensibility of different parts of the body. They found

that there is a difference in the areas needful to discriminate motion upon different parts of the dermal surface, as there is difference of sensibility in discriminating compass-points far finer than the motor sensibility is. Whether it is more or less variable than the other, and whether it varies with locality in the same manner, our data do not yet enable us to say.

4. Effect of change of pressure or weights. It appears that the time needful for judgment of direction decreases as weights increase, but far more rapidly for the increment from 15 to 45 than for the equal interval from 45 to 75 grammes.

Their conclusion is that "local signs" are quite heterogeneous, and that in the strong tendency we have to move the touching dermal surface over objects in contact with it, we are seeking not merely to multiply but to diversify our sensuous data for judging the nature of the impressions, and to fill up the dermal "blind spots," between which impressions are sifted into us.—*Mind*, October, 1885.

ISAAC OTT, M.D.

c.—GENERAL PATHOLOGY OF THE NERVOUS SYSTEM.

GILLES DE LA TOURETTE'S DISEASE.—The St. Louis *Courier of Medicine* for September contains a translation of an article by Paul Le Gendre on this subject, reviewing M. Gilles de la Tourette's contribution—*Archives de Neurologie*. The latter author reported nine observations, personal, or derived from La Salpêtrière. One of the cases was published by Itard in 1825, cited anew by Roth in 1850, and by Sandras in 1851; later was seen by Charcot. M. de la Tourette includes in the same group of cases Trousseau's laryngeal or diaphragmatic choreas accompanied by "tics"; also the diseases of "The Jumpers of Maine," reported by Beard in 1880, the *Latah* of Malasia, by O'Brien, in 1883; the Myriachit observed by American officers in Siberia, and reported by Hammond in 1884. In all, the principal characteristics are a special motor inco-ordination, and an impulse at first to imitate speech and gesture—*écholalie*, then to utter, involuntarily, obscene exclamations—*prolalie*. The disease generally begins at an early age, fourth to sixteenth years; it affects both sexes, but males much more frequently. It has been seen in all classes of society, and in all latitudes. Moral emotions, especially fear, have been invoked as causes, but the true and determining cause is heredity, if not of the disease itself, at least that of a defect of the nervous system.

The mode of commencement is nearly always the same. A special motor inco-ordination is generally observed in the child at school or at home. This consists in crises of muscular twitchings, which agitate one of the upper extremities, then the other, and the face. One of the arms is jerked with convulsive movements; the fingers extend and flex alternately; the shoulders are